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EXAMINER
SUCHECKI, KRYSTYNA

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/899,329	Applicant(s) JOHNSON ET AL.	
	Examiner Krystyna Suchecki	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
It does not state that the person making the oath or declaration believes the named inventor or inventors to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

The specification to which the oath or declaration is directed has not been adequately identified. See MPEP § 601.01(a).

It does not state that the person making the oath or declaration has reviewed and understands the contents of the specification, including the claims, as amended by any amendment specifically referred to in the oath or declaration.

It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

It does not identify the foreign application for patent or inventor's certificate on which priority is claimed pursuant to 37 CFR 1.55, and any foreign application having a filing date before that of the application on which priority is claimed, by specifying the application number, country, day, month and year of its filing.

Specification

1. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lail (US 2001/0007604) in view of Applicant's disclosure.

4. Regarding Claim 1, Lail teaches an elongated optical fiber cable with a longitudinal axis and with more than 1000 optical fibers (Paragraph 0018), said cable comprising:

a. a central strength member structure coaxial with the longitudinal axis (Paragraphs 0024 and 0031);

b. a plurality of longitudinally extending buffer tubes disposed around the central strength member structure in a single layer with each tube in contact with a pair of adjacent tubes and in contact with the strength member structure, the number of buffer tubes being "at least one" (Paragraph 0024) and "one or more" (Paragraph 0031), understood to include greater than three and less than six buffer tubes, and each tube having a bore of a predetermined size;

c. a plurality of optical fiber ribbons in a stack in the bore of each of said tubes, each stack substantially filling, but being loosely received, in the bore of the tube in which the stack is received and each ribbon comprising a plurality of optical fibers in side-by-side relation (Paragraphs 0017-0021, 0029 and 0033) and wherein the total number of optical fibers in the plurality of buffer tubes is greater than 1000 (Paragraph 0018); and

d. a jacket encircling the plurality of buffer tubes (Paragraphs 0024 and 0031).

5. Lail does not explicitly teach said cable having a fill factor not greater than about 85% in a two inch duct.

6. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

7. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 85% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

8. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 85% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Applicant, Page 3), avoiding replacement of the ducts (Applicant, Pages 2-3) and maximizing optical fiber density in a cable to be installed in a passageway (Lail, Paragraphs 0003 and 0009).

9. Regarding Claim 2, Lail teaches an optical fiber cable as set forth in claim 1 wherein the number of buffer tubes is "at least one" (Paragraph 0024) and "one or more" (Paragraph 0031), understood to include four, the total number of optical fibers is greater than 2000 (Paragraph 0018).

10. Lail does not explicitly teach the fill factor as not greater than about 80% in a two inch duct.

11. Lail impliedly teaches a fill factor as not greater than about 80% in a two inch duct. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

12. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 85% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

13. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 85% or lower for the purpose of providing

cable that is easier to thread or feed through a duct (Applicant, Page 3), avoiding replacement of the ducts (Applicant, Pages 2-3) and maximizing optical fiber density in a cable to be installed in a passageway (Lail, Paragraphs 0003 and 0009).

14. Regarding Claim 3, Lail teaches an optical fiber cable as set forth in claim 2 wherein each of the optical fiber ribbons in a stack received in at least one buffer tube contains the same number of optical fibers (Paragraphs 0017-0021, 0029 and 0033).

15. Regarding Claim 4, Lail teaches an optical fiber cable as set forth in claim 3 wherein each of the ribbons in a stack received in at least one buffer tube contains twenty-four optical fibers (Paragraph 0032).

16. Regarding Claim 5, Lail teaches an optical fiber cable as set forth in claim 2 wherein some of the optical fiber ribbons in a stack received in at least one buffer tube contain fewer optical fibers than other optical fiber ribbons in the same stack (Paragraphs 0032-0033, 0021 and 0018).

17. Regarding Claim 6, Lail teaches an optical fiber cable as set forth in claim 5 wherein some of the optical fiber ribbons contain twelve optical fibers and some of the optical fiber ribbons contain twenty four optical fibers (Paragraphs 0018 and 0032).

18. Regarding Claim 7, Lail does not explicitly teach said cable having a fill factor not greater than about 75% in a two inch duct.

19. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4

inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

20. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 85% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

21. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 75% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Applicant, Page 3), avoiding replacement of the ducts (Applicant, Pages 2-3) and maximizing optical fiber density in a cable to be installed in a passageway (Lail, Paragraphs 0003 and 0009).

22. Regarding Claim 8, Lail teaches an optical fiber cable as set forth in claim 1 wherein the number of buffer tubes is "at least one" (Paragraph 0024) and "one or more" (Paragraph 0031), understood to include four, the total number of optical fibers is greater than 1500 (Paragraph 0018).

23. Lail does not explicitly teach said cable having a fill factor not greater than about 85% in a 1.5 inch duct.

24. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%) and thereby teaches that "installable" is a fill factor not greater than 85%. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

25. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to design the cable of Paragraph 0031 to have a similar fill factor of less than 85% in a 1.5 inch duct in order to attain maximized optical fiber density in a cable to be installed in a passageway (Paragraphs 0003 and 0009).

26. Regarding Claim 9, Lail teaches an optical fiber cable as set forth in claim 8 wherein there are interstices within the jacket which are intermediate pairs of buffer tubes and also intermediate such pairs of buffer tubes and the jacket and wherein there are additional optical fibers in at least one of the interstices (Paragraphs 0017, 0024 and 0032-0033).

27. Regarding Claim 10, Lail teaches an optical fiber cable as set forth in claim 9 wherein the total number of optical fibers is at least 1700 (Paragraph 0018).

28. Regarding Claim 11, Lail teaches an optical fiber cable as set forth in claim 1 wherein the number of buffer tubes is "at least one" (Paragraph 0024) and "one or more" (Paragraph 0031),

understood to include five and the total number of optical fibers is greater than 2000 (Paragraph 0018).

29. Lail does not explicitly teach said cable having a fill factor not greater than about 80% in a two inch duct.

30. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

31. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 80-85% for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

32. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 80% for the purpose of providing cable that is easier to thread or feed through a duct (Applicant, Page 3), avoiding replacement of the ducts (Applicant, Pages 2-3) and maximizing optical fiber density in a cable to be installed in a passageway (Lail, Paragraphs 0003 and 0009).

33. Regarding Claim 12, Lail teaches an optical fiber cable as set forth in claim 11 wherein each of the optical fiber ribbons in a stack received in at least one buffer tube contains the same number of optical fibers (Paragraphs 0017-0021 and 0032-0033).

34. Regarding Claim 13, Lail teaches an optical fiber cable as set forth in claim 12 wherein each of the ribbons in a stack received in at least one buffer tube contains twenty-four optical fibers (Paragraph 0032).

35. Regarding Claim 14, Lail teaches an optical fiber cable as set forth in claim 11 wherein some of the optical fiber ribbons in a stack received in at least one buffer tube contain fewer optical fibers than other optical fiber ribbons in the same stack (Paragraphs 0017-0021 and 0032-0033).

36. Regarding Claim 15, Lail teaches an optical fiber cable as set forth in claim 14 wherein some of the optical fiber ribbons contain twelve optical fibers and some of the optical fiber ribbons contain twenty four optical fibers (Paragraphs 0017-0021 and 0032-0033).

37. Regarding Claim 16, Lail teaches an optical fiber cable as set forth in claim 1 wherein the number of buffer tubes is "at least one" (Paragraph 0024) and "one or more" (Paragraph 0031), understood to include five and the total number of optical fibers is greater than 2600 (Paragraph 0018).

38. Lail does not explicitly teach said cable having a fill factor not greater than about 80% in a two inch duct.

39. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

40. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 80-85% for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

41. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 80% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Applicant, Page 3) and also to avoid replacement of the ducts (Pages 2). It would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify the cable components to achieve greater than 2000 optical fibers (i.e. 2600 optical fibers) in a cable with a fill factor of 80% in a two inch duct in order to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

42. Regarding Claim 17, Lail teaches an optical fiber cable as set forth in claim 1 wherein the central strength member structure comprises a core of high tensile strength material and an encircling layer of jacketing material (Paragraphs 0024 and 0031).

43. Regarding Claim 18, Lail teaches an optical fiber cable as set forth in claim 1 wherein the central strength member structure comprises a core of high tensile strength material and an encircling layer of water blocking material (Paragraphs 0024 and 0031).

44. Regarding Claim 19, Lail teaches an optical fiber cable as set forth in claim 1 wherein the central strength member structure comprises e-glass without an up-jacket (Paragraph 0024).

45. Regarding Claim 20, Lail teaches an optical fiber cable as set forth in claim 1 further comprising water blocking material within the jacket (Paragraphs 0024, 0026-0028 and 0031).

46. Regarding Claim 21, Lail teaches an optical fiber cable as set forth in claim 1 further comprising flexible strength members within the jacket and spaced from the central strength member structure (Paragraphs 0009, 0024, 0026-0028 and 0031-0033).

47. Regarding Claim 22, Lail teaches an optical fiber cable as set forth in claim 1 wherein the buffer tubes are disposed around the central strength member structure in reverse alternating lay (Paragraphs 0024 and 0031).

48. Regarding Claim 23, Lail teaches an elongated optical fiber cable with a longitudinal axis and with more than 1000 optical fibers (Paragraph 0018), said cable comprising:

e. a central strength member structure coaxial with the longitudinal axis (Paragraphs 0024 and 0031);

f. a plurality of longitudinally extending buffer tubes disposed around the central strength member structure in a single layer with each tube in contact with a pair of adjacent tubes and in contact with the strength member structure, the number of buffer tubes being "at least one" (Paragraph 0024) and "one or more" (Paragraph 0031), understood to include four and each tube having a bore of a predetermined size (Paragraphs 0024 and 0031-0032);

g. a plurality of optical fiber ribbons in a stack in the bore of each of said tubes, each stack substantially filling, but being loosely received, in the bore of the tube in which the stack is received and each ribbon comprising a plurality of optical fibers in side-by-side relation (Paragraphs 0017-0021, 0029 and 0033) and wherein the total number of optical fibers in the plurality of buffer tubes is greater than 1000 (Paragraph 018); and

h. a jacket encircling the plurality of buffer tubes (Paragraphs 0024 and 0031).

49. Lail does not explicitly teach said cable having a fill factor not greater than about 85% in a two inch duct.

50. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

51. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 85% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

52. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 85% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Applicant, Page 3), avoiding replacement of the ducts (Applicant, Pages 2-3) and maximizing optical fiber density in a cable to be installed in a passageway (Lail, Paragraphs 0003 and 0009).

53. Regarding Claim 24, Lail teaches an elongated optical fiber cable as set forth in claim 23 wherein the number of optical fibers is more than 1500 (Paragraph 0018).

54. Lail does not explicitly teach said cable having a fill factor not greater than about 65% in a two inch duct.

55. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with

the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

56. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 80-85% for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

57. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 65% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Applicant, Page 3) and also to avoid replacement of the ducts (Pages 2). It would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify the cable components to achieve greater than 1500 optical fibers in a cable with a fill factor of 60% in a two inch duct in order to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

58. Regarding Claim 25, Lail teaches an elongated optical fiber cable as set forth in claim 23 wherein the number of optical fibers is more than 1500 (Paragraph 0018).

59. Lail does not explicitly teach said cable having a fill factor not greater than about 85% in a 1.5 inch duct.

60. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%) and thereby teaches that "installable" is a fill factor not greater than 85%. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

61. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to design the cable of Paragraph 0031 to have a similar fill factor of less than 85% in a 1.5 inch duct in order to attain maximized optical fiber density in a cable to be installed in a passageway (Paragraphs 0003 and 0009).

62. Regarding Claim 26, Lail teaches an elongated optical fiber cable as set forth in claim 23 wherein the number of optical fibers is more than 2000 (Paragraph 0018).

63. Lail does not explicitly teach said cable having a fill factor not greater than about 80% in a two inch duct.

64. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%). A cable of this size would have a fill factor of 63.0% in a 2.0 inch duct. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with

the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

65. Applicant discloses that it is within the ordinary skill of one experienced in the art to design a cable with a fill factor of 80-85% for the purpose of providing cable that is easier to thread or feed through a duct (Page 3). Applicant also states that 1.5 inch and 2.0 inch ducts are industry standard ducts and that it is preferential to maintain the use of the standard ducts in order to avoid replacement of the ducts (Pages 2-3).

66. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to ensure that the outside diameter of the cable of Lail could be fed through, and used with, a 2.0 inch duct with a fill factor of 80% or lower for the purpose of providing cable that is easier to thread or feed through a duct (Applicant, Page 3) and also to avoid replacement of the ducts (Pages 2). It would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify the cable components to achieve greater than 2000 optical fibers in a cable with a fill factor of 80% in a two inch duct in order to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

67. Regarding Claim 27, Lail teaches an optical fiber cable as set forth in claim 23 wherein there are interstices within the jacket which are intermediate pairs of buffer tubes and which are also intermediate such pairs of buffer tubes and the jacket and further comprising additional optical fibers in at least one of the interstices (Paragraphs 0017, 0024 and 0032-0033).

68. Regarding Claim 28, Lail teaches an optical fiber cable as set forth in claim 27 wherein the number of optical fibers is more than 1800 (Paragraph 0018).

69. Lail does not explicitly teach said cable having a fill factor not greater than about 85% in a 1.5 inch duct.

70. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%) and thereby teaches that "installable" is a fill factor not greater than 85%. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

71. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to design the cable of Paragraph 0031 to have a similar fill factor of less than 85% in a 1.5 inch duct in order to attain maximized optical fiber density in a cable to be installed in a passageway (Paragraphs 0003 and 0009).

72. Regarding Claim 29, Lail teaches an optical fiber cable as set forth in claim 27 wherein the additional optical fibers are loosely received in a buffer tube which is loosely received in the interstice (Paragraph 0033).

73. Regarding Claim 30, Lail teaches an optical fiber as set forth in claim 23 wherein each of the ribbons in each stack comprises twenty-four optical fibers (Paragraph 0032), wherein the cable comprises additional optical fiber ribbons with a lesser number of optical fibers and which

are disposed at at least one end of each stack (Paragraphs 0017-0021) and wherein the number of optical fibers is more than 1800 (Paragraph 0018).

74. Lail does not explicitly teach said cable having a fill factor not greater than about 85% in a 1.5 inch duct.

75. Lail discloses that a cable of his invention should be designed to be installable in a 1.50 inch duct (Paragraphs 0031 and 0032). He qualifies his statement of "installable" by citing dimensions in Paragraph 0032. The fill factor is approximately 84% ([(32.0mm * [1.0mm/25.4 inches])/1.5 inches] = 84.0%) and thereby teaches that "installable" is a fill factor not greater than 85%. Further, Lail teaches it is possible to balance the attainment of a desired fiber count with the capability of installing that cable in a passageway by properly balancing cable factors in order to attain maximized optical fiber density (Paragraphs 0003 and 0009).

76. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to design the cable of Paragraph 0031 to have a similar fill factor of less than 85% in a 1.5 inch duct in order to attain maximized optical fiber density in a cable to be installed in a passageway (Paragraphs 0003 and 0009).

Conclusion

77. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patents to Field (US 5,621,841 and US 6,014,487) are cited for your convenience, as they are incorporated into Lail's Application in Paragraphs 0024 and 0031. Patent US 6,192,178 to Logan et al. is the Application from which Lail continues.

78. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (703) 305-5424. The examiner can normally be reached on M-F 8-6, with alternating Fridays off.

79. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

80. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

ROBERT H. KIM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

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December 13, 2002